REMARKS

The examiner's action mailed on May 1, 2008, has been received and its contents carefully considered. It is respectfully submitted that this Amendment should be entered after final rejection, as it merely cancels a claim in accordance with 37 CFR §1.116(b)(1), and consideration of claim 1 incorporating the features of previously presented claim 2 presents no new issues requiring a further search.

Claim 1 has been amended to incorporate the features of claim 2, and accordingly claim 2 has been cancelled without prejudice and claims 3 and 4 amended to depend from claim 1. Claim 1 is the sole independent claim, and claims 1 and 3-13 remain pending. Reconsideration is respectfully requested.

CLAIM REJECTIONS UNDER 35 U.S.C. §§102 & 103

For at least the following reasons, it is submitted that this application is in condition for allowance.

Claims 1 and 8 were rejected under 35 U.S.C. §102(b) as being anticipated by *Ma et al.* (US 6,082,619) and claims 2-5 were rejected under 35 U.S.C. §103(a) as obvious over the combination of *Ma et al.* in view of *Yamagata et al.* (US 6,226,417 B1). These rejections are each respectfully traversed.

Claim 1 as amended reads as follows:

> A method for correcting skew images comprising the steps of:
> (a) detecting a plurality of edge areas on an image, each of the edge areas having an edge, wherein the edge areas are determined by the steps of:
> (i) *grouping the image into a plurality of blocks, each of the blocks having N*N pixels, wherein N is an odd number other than 1*;

(ii) *grouping the pixels into a plurality of pixel groups according to a plurality of grouping angles*;
(iii) calculating the display differences between the adjacent pixel groups according to each of the grouping angles;
(iv) *confirming that the maximum display difference is larger than the threshold*; and
(v) *defining the blocks with the edges as the edge areas*;
(b) calculating a plurality of gradient angles of the edge areas, and determining a predominant angle from among the calculated gradient angles; and
(c) rotating the image according to the predominant gradient angle;
wherein the edge represents that the maximum display difference in each of the edge areas is larger than a threshold.

(*emphasis added*)

The features of claim 2 have been added to claim 1, and Applicant respectfully submits that the amended claim 1 is patentable over *Ma et al.* and *Yamagata et al.* The reasons are given as follows.

Firstly, it is non-obvious to a person skilled in the art to modify *Ma et al.* in view of *Yamagata et al.*

With respect to the claimed steps of "confirming that the maximum display difference is larger than the threshold" and "defining the blocks with the edges as the edge areas", the Office Action relies upon of *Ma et al.*, col.12 lines 62-64, as follows:

An edge transistor is defined as a first sequence of at least N pixels in a first color followed by a second sequence of at least N pixels in the opposite color.

The Office Action admits that *Ma et al.* does not teach the limitations of claim 1 prior to this Amendment, and alleges that these are taught by *Yamagata et al.*, and in regard to the claimed step of "grouping the pixels into a plurality of

pixel groups according to a plurality of grouping angles" the Office Action also relies upon *Yamagata et al.*, col. 1, lines 61-67. See the full paragraph reproduced below (col. 1, lines 52-67):

> In order to solve the above and other problems, according to a first aspect of the current invention, a method of recognizing an image pattern having an outer boundary, including inputting an input image pattern and a standard dictionary containing standard characteristic values for predetermined image patterns; determining whether an outer boundary exists for the input image pattern; determining a rotational angle of the input image pattern based upon the outer boundary; determining a characteristic value at each of a set of predetermined relative locations within the input image pattern; adjusting the characteristic values according to the rotational angle; and determining whether the input image pattern matches one of the predetermined image patterns based upon a similarity distance between the standard characteristic values and the adjusted characteristic values.

The Office Action alleges that the motivation to combine the teachings of *Yamagata et al.* with those of *Ma et al.* would be to "reduce processing time and memory requirements, citing *Yamagata et al.*, col. 1, lines 10-11. See the paragraph at col. 1, lines 7-11:

> The current invention is generally related to an image pattern recognition process and system, and more particularly related to a method and a system for recognizing a rotated predetermined image pattern with reduced time and memory requirements.

However, according to the specification of *Ma et al.*, the border of the image is decided *after* the steps of *Ma et al.* col. 12, lines 62-64 are performed. Similarly, according to the specification of *Yamagata et al.*, the border of the image is also decided *after* the steps of col. 1, lines 61-67 are performed. Therefore, Applicant believes that there is no motivation to a person skilled in the art to apply the steps of col. 1, lines 61-67 of *Yamagata et al.* to determining the

border of the image *again*, after the border of the image was determined by the steps of col. 12, lines 62-64 of *Ma et al.*

Secondly, even though the Office Action insists that the modification of *Ma et al.* in view of *Yamagata et al.* is obvious, the combination does not teach or suggest Applicant's step of "grouping the image into a plurality of blocks, each of the blocks having N*N pixels, wherein N is an odd number other than 1".

The Office Action relies on *Yamagata et al.* FIG. 6 to reject the step of "grouping the image into a plurality of blocks, each of the blocks having N*N pixels, wherein N is an odd number other than 1". To traverse Applicant's rejection, attention is respectfully drawn to *Yamagata et al.* col. 5, lines 14-18, which recite a mask of a predetermined size and shape is used to detect an edge:

> In general, the edge detection is performed by detecting an edge from predetermined relative locations on the mask towards a center of the input image pattern within the mask.

Furthermore, attention is also drawn to *Yamagata et al.* col.5, lines 33-43, which recites:

> The size of the mask is 33 by 33 pixels, and there are sixteen predetermined locations on the mask. An edge detection step is performed from each of these locations towards the center of the mask as indicated by arrows. At each location, a particular set of pixel patterns or local mask patterns is used to detect a circular edge, and the same set of pixel patterns is moved towards the center of the mask to further find any match. At certain locations, only one pixel pattern (4x4 or 3x2 pixels) is used while at other locations, two pixel patters (3x3 pixels) are used.

Accordingly, *Yamagata et al.* teaches or suggests that an image is put into a mask with a particular shape and moving the pixel patterns on the mask toward particular directions to detect the border of the image. That is to say, the pixel pattern is a part of the *mask*, not the *image*. In contrast, the claimed step groups the *image* into a plurality of blocks.

In addition, even assuming, for sake of argument, that the pixel pattern of *Yamagata et al.* were a *part* of the image, Applicant respectfully submits that the claimed step groups the *whole* image into a plurality of blocks. Therefore, *Yamagata et al.* does not teach or suggest the claimed step of "grouping the image into a plurality of blocks, each of the blocks having N*N pixels, wherein N is an odd number other than 1".

Thirdly, the combination of *Ma et al.* and *Yamagata et al.* does not teach or suggest the claimed step of "grouping the pixels into a plurality of pixel groups according to a plurality of grouping angles".

The Office Action relies on col.1, lines 61-67 of *Yamagata et al.*, as reproduced above, to reject Applicant's step of "grouping the pixels into a plurality of pixel groups according to a plurality of grouping angles". Attention is respectfully drawn to the complete paragraph, i.e. col.1, lines 52-67 of *Yamagata et al.*, as reproduced above in full. The steps of detecting the border of the image have completed in lines 57-58, i.e. "determining whether an outer boundary exists for the input image pattern". What the Office Action relies upon in col. 1, lines 61-67 of *Yamagata et al.* is a step of **rotating** the image, which is quite different than

the technique of detecting the border. Therefore, it is improper to reject the claimed step used for detecting the border of the image based on a step for rotating the image.

Furthermore, the step of 1, lines 61-67 of *Yamagata et al.* is to *rotate* the image, but the Applicant's step is to *group* the image in to multiple pixel groups. Therefore, *Ma et al.* and *Yamagata et al.*, whether taken separately or in combination fail to teach or suggest the claimed step of "grouping the pixels into a plurality of pixel groups according to a plurality of grouping angles".

Consequently, neither *Ma et al.* nor *Yamagata et al.*, whether taken separately or in combination, teaches or suggests all the steps recited in claim 1, which is therefore patentable.

Regarding claims 3-13:

As claims 3-13 each directly or indirectly depend from amended claim 1, they are also patentable over the citations for at least the same reasons that amended claim1 is patentable, as well as for additional features recited therein.

The Office Action also rejected the remaining dependent claims under 35 USC 103(a) as being unpatentable over *Ma et al.* in combination with respective secondary references cited for their alleged teaching of the features introduced in the dependent claims.

More specifically, claim 6 was rejected as obvious over *Ma et al.* and *Yamagata et al.* further in view of *Tretter* (US 5,901,253), claims 7 and 12 over the combination of *Ma et al.* with *Tretter*, claims 9 and 10 over the combination of *Ma et al.* with *Kapoor et al.* ("Skew angle detection of a cursive handwritten

Devanagari script character image", Kapoor et al., J. Indian Inst. Sci., Vol. 82, pp 161-175, May-August 2002), claim 11 over the combination of *Ma et al.* with *Ueda et al.* (US 6,433,896 B1) and claim 13 over the combination of *Ma et al.* with *Taylor et al.* (US 6,178,270 B1). These rejections are each respectfully traversed.

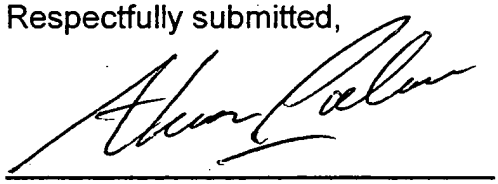
None of these additional secondary references shows, suggests or otherwise makes obvious, when taken with *Ma et al.* and/or *Yamagata et al.*, the features of the invention as recited in claim 1, from which the dependent claims depend. Therefore, for at least the reasons advanced above as to the patentability of claim 1, dependent claims 6, 7 and 9-13 also are deemed clearly to be patentable over the cited references. Reconsideration and withdrawal of the rejections are respectfully requested.

Based on the above, it is submitted that the application is in condition for allowance and such a Notice, with allowed claims 1 and 3-13, earnestly is solicited.

Should the Examiner feel that a conference would help to expedite the prosecution of this application, the Examiner is hereby invited to contact the undersigned counsel to arrange for such an interview.

No fee is believed due. Should any fee be required, however, the Commissioner is hereby authorized to charge the fee to our Deposit Account No. 18-0002, and advise us accordingly.

Respectfully submitted,



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